Design of Computer-Assisted Instruction for Staff Development in the Management of the Heart Failure Client

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Hospital staff nurses are continually faced with the dilemma of having to make rapid assessments on and develop treatment plans for higher acuity level clients. With forthcoming cost-containment strategies, insurance precertifications, and health care utilization review, the inpatient population is presenting with more complicated and multifaceted illnesses. The lengths of stay have decreased while the intensity of care required by the client has increased. Nurses must, therefore, learn to practice as clinical experts, making quick decisions which assure high quality care and positive client outcomes.

Characteristics of expertise include quality decision making, intuition, and knowledge. Expert nurses, because of prior experience with similar situations, can single out relevant information and respond to a situation as a whole rather than going through linear analysis. Because of years of learning, the expert bypasses the linear process of decision-making. The novice, however, has no past concrete experiences to guide her or his decisions and tends to react to clinical situations in a rule-bound way.

With the inpatient population consisting of more elderly and high acuity clients, heart failure has become a common presentation. Early intervention and prevention of complications are important in the clinical management of these individuals. As the incidence and prevalence of this syndrome continue to climb, nurses must remain focused on the management of its manifestations. Waiting for nurses to learn expert management through direct care experience is neither practical nor ethical.

Through the organizational framework of expert concept mapping a computer-assisted instruction (CAI), "Managing Heart Failure Like An Expert," has been designed to assist the novice nurse to make more expert judgments during the management of the heart failure client. Concept mapping is a way of relating concepts in ranking order of importance. The expert and the novice tend to relate concepts in different ways with the difference in hierarchical arrangement being related to their past experiences. An example of this difference is demonstrated in the concept linking of pulmonary edema, dyspnea, and oxygen. Both the novice and the expert view pulmonary edema as being the highest ranking concept in heart failure. The expert, however, ranks oxygen administration as having second priority. The novice ranks dyspnea as second with oxygen administration even lower on the concept ranking order. This difference would suggest that when the novice is faced with a client in pulmonary edema, she or he first identifies the dyspneic state and then administers the oxygen thereby demonstrating linear analytical decision-making.

The CAI, "Managing Heart Failure Like An Expert," utilizes knowledge obtained from clinical experts to assist the novice in expert thinking. This program is an interactive tutorial that begins with things familiar to the novice audience (i.e., anatomy of the heart) and then leads to facts which may be less familiar (i.e., renin-angiotensin system). Hyper-linked hotwords are used throughout the tutorial to provide additional information to the users. Navigation buttons enable the users to move to previous pages for reviewing learned content, to move forward for new content, or to access an index page for navigating to other parts of the program. Screen design is based on audience analysis that includes graphic images on each page for visual representation of the text explanations.

This program runs on any MS-DOS Windows based computer having a 486 processor with 4 megabytes of RAM. This system was chosen for its user friendliness and for it easy access to health care professionals. ToolBook® Version 3.0 by Asymetrix Corporation was the authoring program used in the CAI development. This program is largely a procedural scripting language with an object-oriented programming environment that remains accessible to the novice.

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